

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Matsumoto et al.) Group Art Unit:
) 1796
Appl. No.: 10/596831)
) Examiner:
Filed: June 26, 2006) Nguyen, Khanh Tuan
)
For: IONIC LIQUID, METHOD FOR)
PRODUCING SAME, DOUBLE LAYER)
CAPACITOR COMPRISING SAME, AND)
LITHIUM BATTERY	

DECLARATION UNDER 37 C.F.R. §1.132

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Hajime Matsumoto, do hereby declare that:

1. I am one of the inventors of the above-identified application.
2. I graduated from Osaka University, Faculty of Engineering, Department of Applied Chemistry, in 1991.

I obtained a Master's Degree in Engineering, from the Graduate School of Engineering of Osaka University in 1993 (March). I received a PhD in Engineering from Osaka University in 1996 (March). In 1996 (April), I joined the National Institute of Advanced Industrial Science and Technology, assignee of the above-identified application, where I was engaged in research on electrolytes for electrochemical devices from 1996 (April) to 2001 (March). Since 2001 (April), I have been engaged in research in the same field, as an engineer in the Research Institute for Ubiquitous Energy Devices of the National Institute of Advanced Industrial Science and Technology.

3. The experiment given below was carried out under my general direction and supervision.

Experiment

1. Summary and Purpose of Experiment

Triethylbutylammonium tetrafluoroborate (N2224-BF₄, hereunder triethylbutylammonium may be referred to as N2224) was prepared, and the melting point was measured.

2. Experimental Method and Result

Triethylamine and butyl iodide were mixed in acetone. The resulting mixture was stirred overnight, obtaining N2224-I.

Unreacted substances were removed using ether, followed by washing with a small amount of acetone.

Equimolar amounts of aqueous solutions of N2224-I and AgBF₄ were prepared and the aqueous solutions were then mixed. AgBr, which is insoluble in water, was removed by filtration. The resulting filtrate was subjected to distillation using an evaporator under reduced pressure, obtaining a white powder. The white powder thus obtained was dried under reduced pressure at 100°C, obtaining N2224-BF₄. The melting point of the triethylbutylammonium tetrafluoroborate thus obtained was 163°C.

I, the undersigned, declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: May 20, 2010

Hajime Matsumoto

Hajime Matsumoto